Observed Conjunctions of Satellite IV. with Jupiter. By the Rev. A. Freeman, M.A.

Date.	Observed d.	Predicted 6.	P-0.	Power.
^{1892.} (1) Nov. 3	h m 10 6.25	h m 10 18.5	m 12 [.] 25	116
1893. (2) Feb. 20	6 16.1	6 22.0	5.9	165
(3) Aug. 24	13 27.75	13 37.9	10.12	80
(4) Oct. 13	15 9.2	15 12.7	3.2	116
(5) Oct. 30	8 9.5 (W)	8 17.5	8·o	116

By a conjunction is meant a position of the satellite upon the least apparent diameter of the planet, produced beyond the disc. In one case, marked (W), the position observed was upon the tangent to 4's disc at the west end of his equator; in this case 2 hours 25 minutes is assumed to be the interval since conjunction with the polar axis. Usually an equatorial refractor with $6\frac{1}{2}$ inches aperture was employed, except on August 24, when a refractor of 3 inches aperture was used. The predictions refer to Dr. Downing's list of conjunctions in Monthly Notices, vol. lii. p. 597. The following distances are mere estimates. Having no clock-work I made no attempt to measure them with the micrometer. Observations on September 10, September 18, October 5, and November 7, 1893, were impeded by cloud:—

- (1) From centre of IV. to north pole of 4 was one-third of polar radius of 4.
- (2) The N. limb of IV. separated from south pole of 4 by a diameter of IV.'s disc.
- (3) The N. limb of IV. separated from south pole of 24 by one-fourth of polar radius of 24.
- (4) Centre of IV. is south of south pole of 24 by about onethird of polar radius of 24.
- (5) Centre of IV. is south of south pole of 24 by about one-third of polar radius of 24.

The following observations have been supplied to me by Mr. A. Stanley Williams, of West Brighton. They were all made by himself with the aid of his reflecting telescope, having an aperture of $6\frac{1}{2}$ inches. I number them consecutively to my own, with which they may fitly be compared:—

	Date.	Observed d.	Predicted d.	P-0.	Power.
(6)	Nov. 7	h m 11 38.2	h m II 42:2	m 4.0	230
(7)	June 24	15 5.3	14 57.5	Shadow	150
(8)	Aug. 30	8 32.4	8 44.5	12.1	230

The observer's own remarks are:

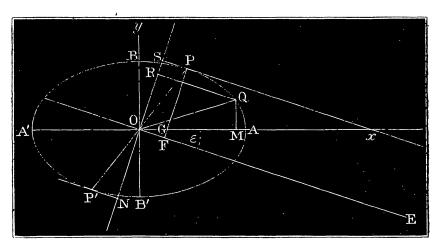
- (6) Clearly past conjunction 4^m after.
- (7) A good observation of mid-transit of Shadow of IV.
- (8) Sat. IV. appeared as a tolerably round, very dark, almost black spot.

In the case of (7) and (8) the predicted times are inferred from the Nautical Almanac for 1890.

Murston Rectory, Sittingbourne: 1893 November 8.

Method of Finding the Latitudes of Saturn's Belts. By the Rev. A. Freeman, M.A.

Numerous drawings of Saturn having been submitted to my inspection in the past two years, as drawn by several observers, it seems fit to show how they may be used for the purpose of determining the kronocentric latitudes of the edges of belts of the planet by measurement of the distance, taken along the central meridian, from the centre of the planet's disc to the point where the edge of any belt cuts that meridian. By this meridian is meant the line joining the apparent poles of the disc.



In the figure let the ellipse ABA¹B¹ be a section of Saturn by a plane passing through the Earth and the least axis of Saturn.

Let OE be the direction of the Earth, SPx a tangent parallel to OE, SON a straight line perpendicular to OE.

Then the apparent disc of Saturn is projected on the plane through SON perpendicular to OE, by straight lines in the direction of EO.